

Patent Claims

1. A heat exchanger having an in particular
5 hydrophilic surface coating (2; 12), characterized in
that the surface coating (2, 12) includes a gel which
is produced in particular in a sol-gel process.
2. The heat exchanger as claimed in claim 1,
10 characterized in that the sol, which functions as a
coating substance in a sol-gel process, contains alkoxy
compounds of elements from main group III and/or of
elements from main group IV and/or of transition
metals.
- 15 3. The heat exchanger as claimed in claim 2,
characterized in that the transition metals belong to
transition group IV and/or V.
- 20 4. The heat exchanger as claimed in claim 2 or 3,
characterized in that in the alkoxy compounds some of
the hydrolysable alkoxy radicals are substituted by
alkyl and/or aryl radicals, or in that a mixture of
pure alkoxy compounds and alkoxy compounds which partly
25 contain alkyl and/or aryl radicals is provided.
5. The heat exchanger as claimed in one of the
preceding claims, characterized in that the surface
coating (2; 12) contains nanoparticles (3), coated
30 nanoparticles and/or grafted nanoparticles (13)
comprising or consisting of oxides.
6. The heat exchanger as claimed in claim 5,
characterized in that oxides of the elements from main
35 group II and/or main group III and/or oxides of
germanium, tin, lead and/or oxides of the transition
metals and/or oxides of zinc and/or oxides of cerium
are provided.

7. The heat exchanger as claimed in claim 6, characterized in that the transition metals belong to transition IV and/or V.

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8. The heat exchanger as claimed in one of the preceding claims, characterized in that the surface coating (12) contains nanoparticles, coated nanoparticles and/or grafted nanoparticles (13) comprising or consisting of hydrated oxides and/or nitrides and/or carbides.

9. The heat exchanger as claimed in claim 8, characterized in that the hydrated oxides, nitrides and carbides comprise elements from main group III and/or main group IV and/or transition metals and/or cerium.

10. The heat exchanger as claimed in claim 9, characterized in that a transition metal belongs to transition group IV and/or V or is zinc.

11. The heat exchanger as claimed in one of the preceding claims, characterized in that the nanoparticles (3), coated nanoparticles and/or grafted nanoparticles (13) have a mean diameter of from 1 to 1000 nm.

12. The heat exchanger as claimed in one of the preceding claims, characterized in that the surface coating (2; 12) includes constituents with an antimicrobial action.

13. A process for coating a heat exchanger with an in particular hydrophilic surface coating (2; 12), the surface coating (2; 12) being produced by means of a sol-gel process.

14. The process for coating a heat exchanger as claimed in claim 13, characterized in that the surface coating (2; 12) is applied by means of dipping, flooding and/or spraying.

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15. The process for coating a heat exchanger as claimed in one of claims 13 to 14, characterized in that a pre-treatment by means of an acidic or alkaline pickle is carried out, with subsequent scale removal and/or a conversion treatment.

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16. The process for coating a heat exchanger as claimed in claim 15, characterized in that mixed oxides and/or mixed fluorides are formed during the conversion treatment.

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17. The process for coating a heat exchanger as claimed in one of claims 13 to 16, characterized in that a drying process is carried out after a pre-treatment by means of an acidic or alkaline pickle with subsequent scale removal and/or a conversion treatment.

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18. The process for coating a heat exchanger as claimed in one of claims 13 to 17, characterized in that the operation of applying the surface coating (2; 12) is followed by a drying operation.

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19. The process for coating a heat exchanger as claimed in one of claims 13 to 18, characterized in that a surface coating (2; 12) which contains nanoparticles (3), coated nanoparticles and/or grafted nanoparticles (13) is applied.

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